

A NOTE ON *VICTORIACYSTIS WILKINSI* (ANOMALOCYSTITIDA: MITRATA)
FROM THE UPPER SILURIAN OF VICTORIA

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New material of *Victoriacystis wilkinsi* from the Upper Silurian of Victoria reveals new features of the convex surface and permits a more detailed comparison with the congeneric *V. holmesorum* from the Lower Devonian. A revised diagnosis is provided for *V. wilkinsi*, together with a description of the best preserved among the new specimens. □
Anomalocystitida, Victoriacystis, Silurian, Victoria.

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Subsequent to the redescription of the Ludlow anomalocystitid *Victoriacystis wilkinsi* Gill & Caster, 1960 from the Dargile Formation, Heathcote and Melbourne Formations, Hawthorn (Ruta, 1997), we examined additional material in the Museum of Victoria, Melbourne, part of which extends the known distribution of this species. New specimens are generally more complete and fully articulated than those figured by Gill & Caster (1960) and Ruta (1997) and clarify details of the external and internal anatomy of this mitrate. Major differences between *V. wilkinsi* and *V. holmesorum* Ruta & Jell, 1999 from the Lower Devonian Humevale Formation of central Victoria were highlighted by Ruta & Jell (1999b).

SYSTEMATIC PALAEOLOGY

Terminology and plate nomenclature are as used elsewhere in this volume (Ruta & Jell, 1999a). All material is housed in the Museum of Victoria Palaeontological Collections (NMVP) and localities entered in the fossil locality register of the same Museum (NMVPL). All illustrations are of latex casts from internal and external moulds whitened with ammonium chloride sublimate unless otherwise stated.

Class STYLOPHORA Gill & Caster, 1960

Order MITRATA Jackel, 1918

Suborder ANOMALOCYSTITIDA Caster, 1952

Family PLACOCYSTITIDAE Caster, 1952

DIAGNOSIS. Lateral margins of PM convex for most of their length. C3 and C12 in contact with each other. Proximo-lateral angles of C3 truncated (condition of second and third characters

reversed in *Victoriacystis*) (Caster, 1952; Parsley, 1991; Ruta & Jell, 1999b; Ruta, in press).

Victoriacystis Gill & Caster, 1960

TYPE SPECIES. *Victoriacystis wilkinsi* Gill & Caster, 1960 from the Ludlow Dargile Formation, Victoria.

DIAGNOSIS. See Ruta & Jell (1999b) and Ruta (in press).

OTHER SPECIES. *Victoriacystis holmesorum* Ruta & Jell, 1999b from the Lochkovian of the Humevale Formation, central Victoria.

Victoriacystis wilkinsi Gill & Caster, 1960

(Figs 1-5)

MATERIAL. NMVP23086, 109203 from F41-42 (type locality of Gill & Caster, 1960) (Dargile Fm: Ludlow). NMVP18313-18317 from City Brick Co. pit, Camberwell Rd, Hawthorn (Gill & Caster, 1960) (Melbourne Fm: Ludlow). NMVP22160-22161, 22348, 24111, 100457-100458, 100461-100462, 100464-100468 from NMVPL299 (= F31 of Williams, 1964) road cutting S of Bald Hills, 3.2km E of Kilmore (Dargile Fm: Ludlow). NMVP100446-100448 from NMVPL300 (= X64 of Williams, 1964) vicinity of disused mine on Comet Creek, 4.6km SE of Clonbinane (Humevale Fm: Ludlow). NMVP149352 from NMVPL1927 on Broadhurst Creek at the crossing of the Kilmore to Wandong Rd (see Vandenberg, 1992) (Kilmore Siltstone: Ludlow).

DIAGNOSIS (see also Ruta & Jell (1999b) and Ruta (1997, in press)). Lateral body walls slightly diverging ventrally. C-ILM sutures straight, convex or, rarely, sinuous. A-C suture straight or slightly geniculate, at <40° to body axis. PLM much wider distally than proximally. Medial

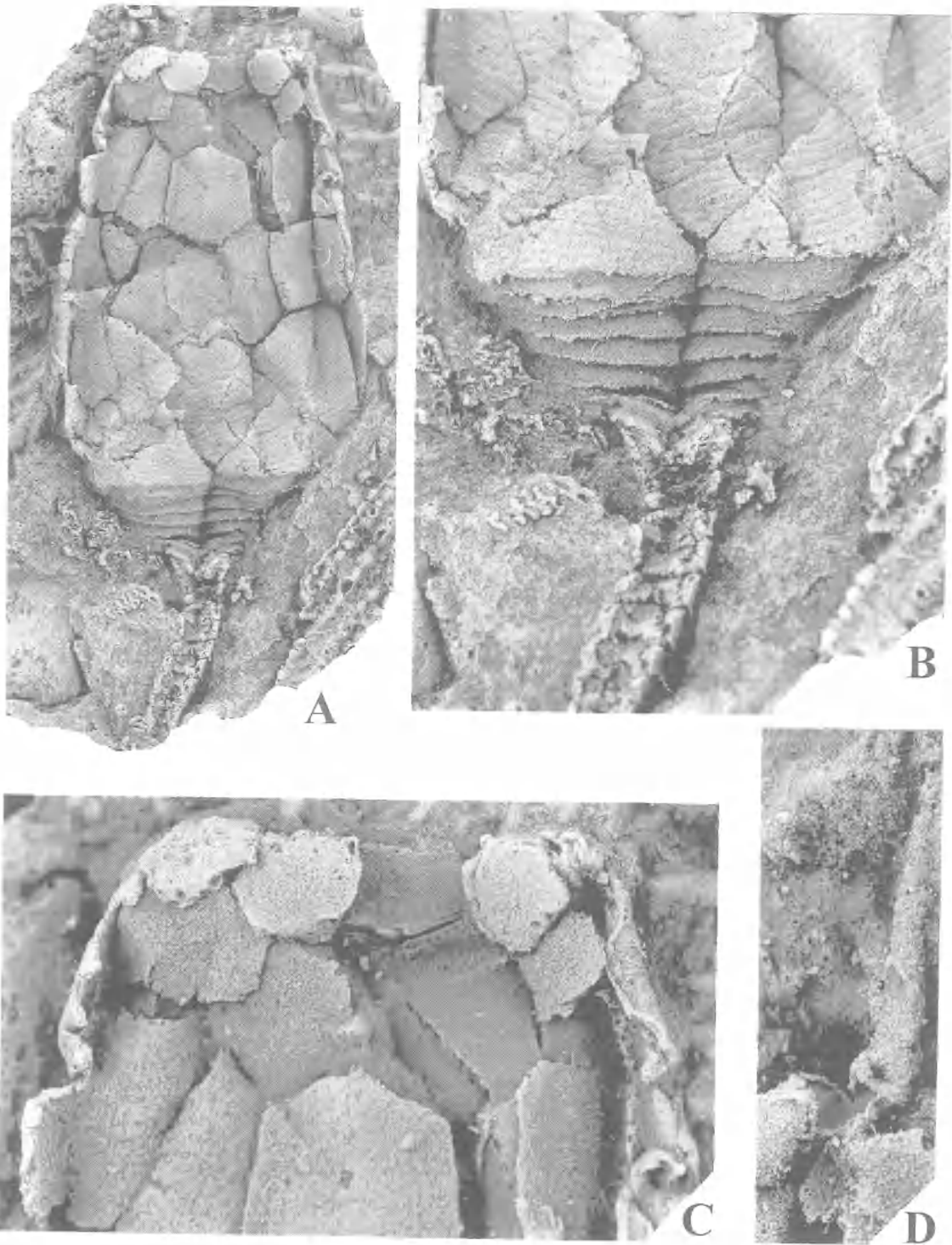


FIG 1. *Victoriacystis wilkinsi* Gill & Caster from NMVPL300. A-C, convex surface, detail of proximal part of appendage and detail of distal part of inside of A, respectively, of NMVP100447, $\times 3$, $\times 6$ and $\times 8$, respectively; D, detail of right spine from Fig. 2C, NMVP100448, $\times 8$.

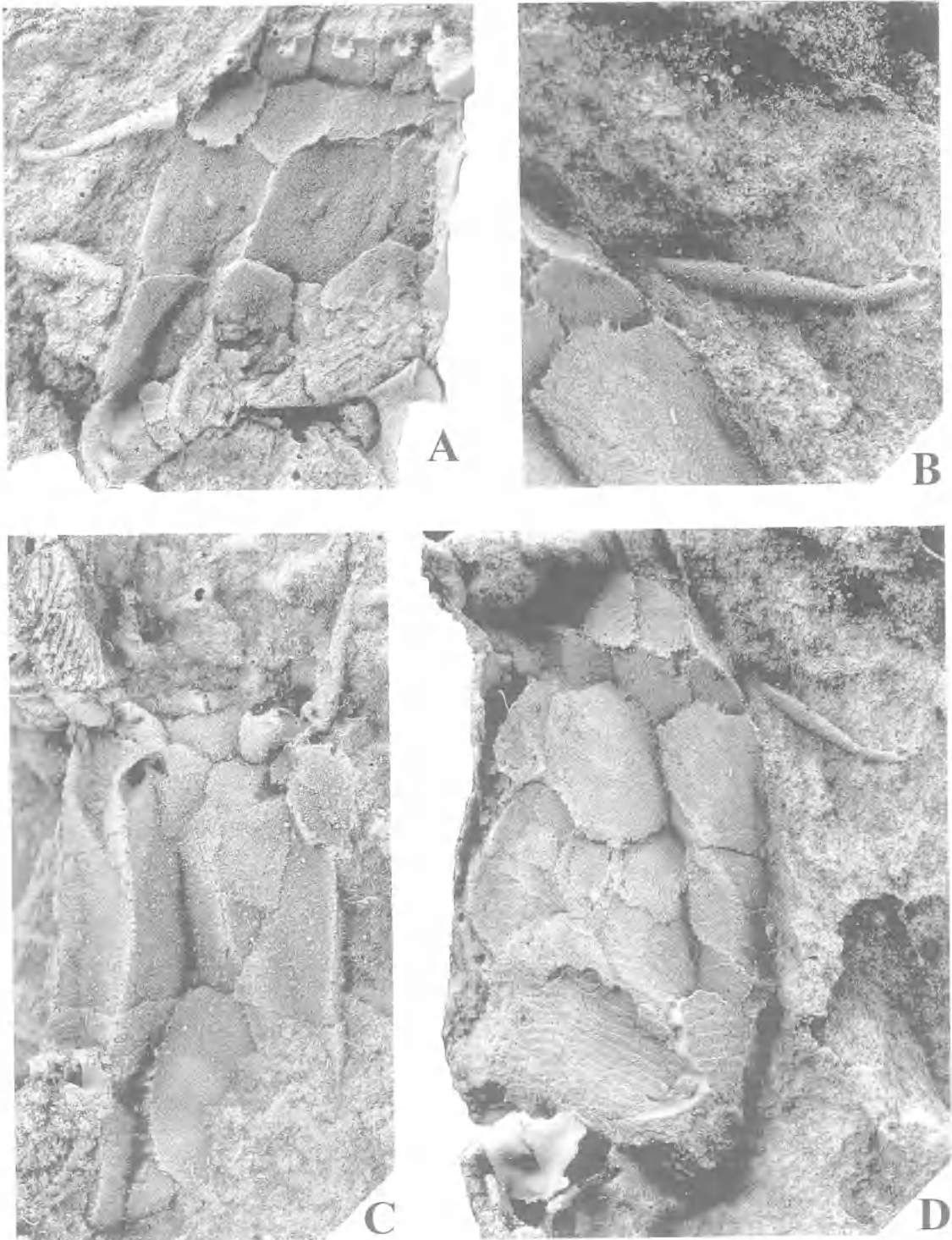


FIG. 2. *Victoriacystis wilkinsi* Gill & Caster. A-B, D, inside of convex surface, detail of left spine and convex surface, respectively, of NMVP100462, from NMVPL229, $\times 5$, $\times 8$ and $\times 5$, respectively; C, plano-concave surface of NMVP100448 from NMVPL300, $\times 4$.

margins of DLM straight. Proximal margins of PM occupying $>1/2$ proximal body excavation. Rows II-IV perpendicular to longitudinal axis or only gently concave distally. C10, C12 and C14 only slightly larger than C16 and C18. Sutures between C15 and C16 and between C18 and C19 strongly diverging proximally. C16 and C18 longer and wider than C15 and C19. C3 much larger than C2 or C4. Few, widely spaced ridges on proximal $1/2-1/3$ of C16 and C18 and near lateral margins of PM. Spout-shaped thickenings internally on C2-C4. Tetrameric rings with weak distal thickenings lacking knobs. Styloid with slightly recurved, poorly developed distal blade only slightly higher than proximal blade. Distal part of appendage not differentiated. Distal ossicles with straight to gently concave distal margins, poorly developed ossicular apices and markedly sloping apical margins.

DESCRIPTION. EXTERNAL. We describe those features not reported by Gill & Caster (1960) or Ruta (1997). Body outline sometimes vase-shaped, with maximum width halfway along length of PLM. LOP subtrapezoidal to subpentagonal. MOP subrectangular, markedly asymmetrical. Distal margins of C2-C5 slightly distal to distal margins of LOP and MOP. Proximal margin of C17 sometimes accommodated by shallow notch on distal angle of C21 (Figs 1A, 2D, 3E). C21 otherwise shield-shaped (Fig. 1A), with geniculate lateral margins. Spines c. $1/3$ as long as body, uniformly tapering distally, with blunt medial and lateral margins, with proximal $1/4$ shaped like a truncated cone, with central shaft straight and slightly depressed, with distal $1/3$ gently curved medially (Figs 1D, 2A-D, 3D). Terrace-like ridges often irregular and branched near proximolateral angles of plano-concave and convex surfaces (Figs 3E, 4E), irregularly sinuous and widely spaced on proximal $1/2$ of C16 and C18.

INTERNAL. Septum on inside of plano-concave surface (Figs 3E, 4A); distal $1/2$ of septum on interior of C straight and almost parallel to longitudinal axis, widening slightly halfway along its proximal part immediately lateral to the medio-distal angle of left PM. Septum becoming much shallower and broader beyond this point, giving rise to vaguely L-shaped structure straddling the triple junction formed by C with the 2 PM plates, deepening again and gently convex laterally on the lateral $1/2$ of left PM. Cross-section of septum more asymmetrical (steeper to right) at PM than at C. Most distal part

of C portion, corresponding to the diminutive spur of Ubaghs (1967), thickened and bent abruptly to the right at c. 30° to longitudinal axis. Most proximal part of septum on left PM not visible. Distal part of diminutive spur terminating abruptly. Rest of plano-concave surface almost featureless except for poorly pronounced ridge parallel to medio-distal margin of A, fainter medially than in its lateral $1/2$, continuing on C along straight course, almost perpendicular to longitudinal axis and stopping abruptly before reaching lateral margin of C (Figs 1A, C, 4A).

Inside of convex surface (Fig. 2A) with button-like projections on C12, C14, C18 and C19, spout-shaped thickenings on C2, C3 and C4 and tortuous ridges on C16 and C18. Button-like projections only slightly raised with respect to surrounding plate surface, gently merging into the latter and slightly longer than wide; greater axis of projections on C14 and C19 at acute angle with longitudinal body axis. C12 projection slightly larger than remaining projections, c. $1/2$ as large as C19 projection. Spout-shaped projections on C2, C3 and C4 (Figs 2A, 4B) of approximately equal size, occupying distal $1/3$ of inside of plates, c. $1/3$ as wide as these, delimiting a central and 2 lateral depressions, continuing distally into flat, sloping, rectangular area, and proximally into flat or gently convex trapezoidal area. Free margins of spout-shaped projections blunt, continuing laterally into narrow, transversely arched, vertical septa with sharp free margins. Ridges on C16 and C18 poorly preserved (Fig. 2A), apparently interrupted in places, with irregularly sinuous course.

APPENDAGE. Tetrameric rings 7-8, telescopic, with poorly developed distal thickenings without tubercles and blunt parasagittal section, with ring plates on the same side as convex surface of body showing gently convex distal margins (Figs 1A-B, 3A, D-E, 4A, D-E, 5A-E). Two distalmost ring plates on the same side as plano-concave surface of body slightly bent proximally, wrapped around proximal styloid process. Most distal ring plates lying on the same side as convex surface much smaller than more proximal plates, flanking the most proximal part of the styloid body immediately underneath free margin of proximal blade. Free margins of distal blade slightly concave proximally in lateral view, especially in abapical $1/2$. Keel between proximal and distal blade sharp, with wedge-shaped lateral profile (Fig. 5A, C-D). Ossicles scarcely overlapping each other proximo-distally, with gently concave to

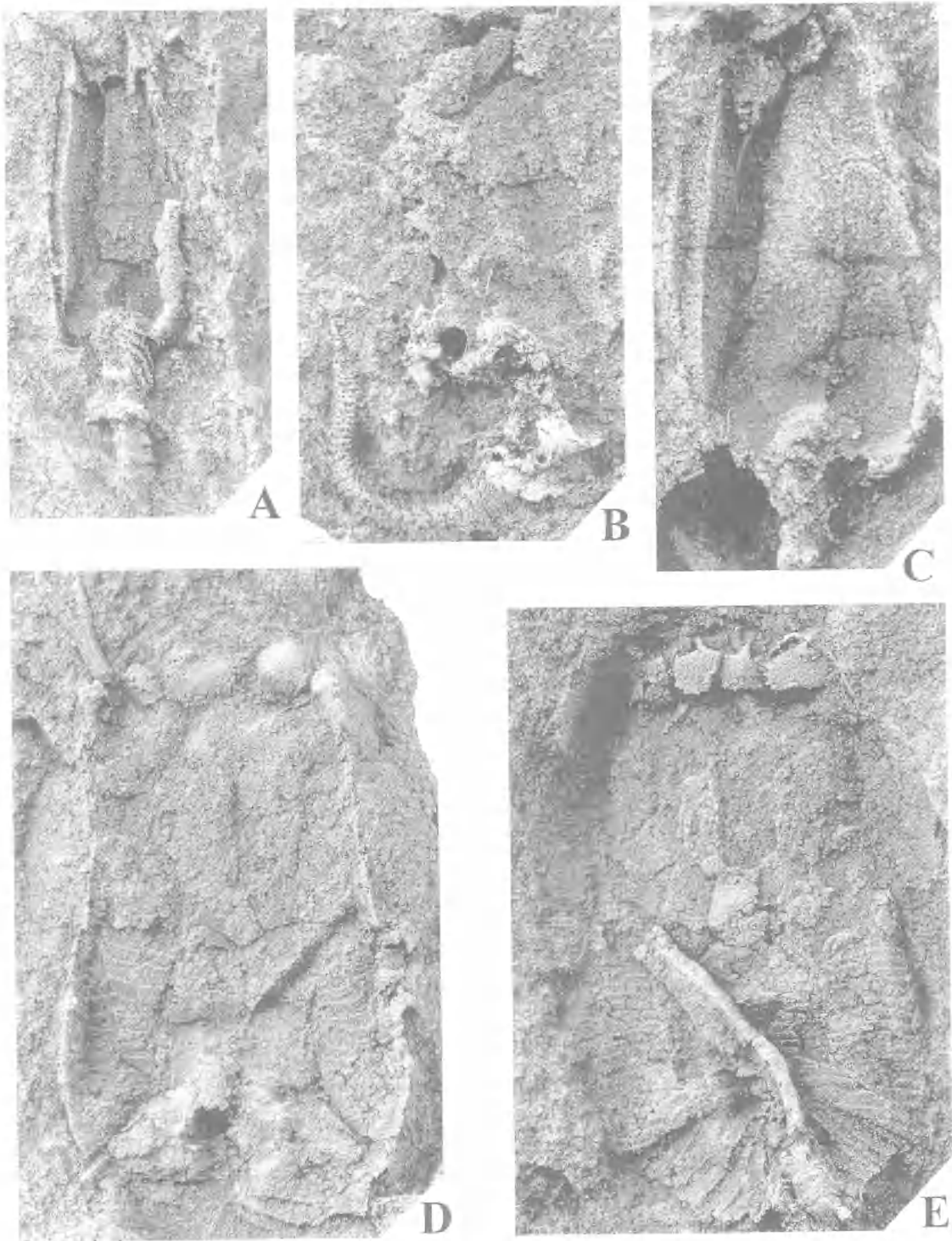


FIG. 3. *Victoriacystis wilkinsi* Gill & Caster, all from NMV PL299. A, plano-concave surface and appendage of NMVP22161, $\times 5$. B, poorly preserved convex surface and appendage of NMVP22348, $\times 6$. C, plano-concave surface of NMVP24111, $\times 8$. D, plano-concave surface of NMVP18314, $\times 5$. E, convex surface partially disarticulated and revealing distal half of inside of plano-concave surface of NMVP18316, $\times 5$.

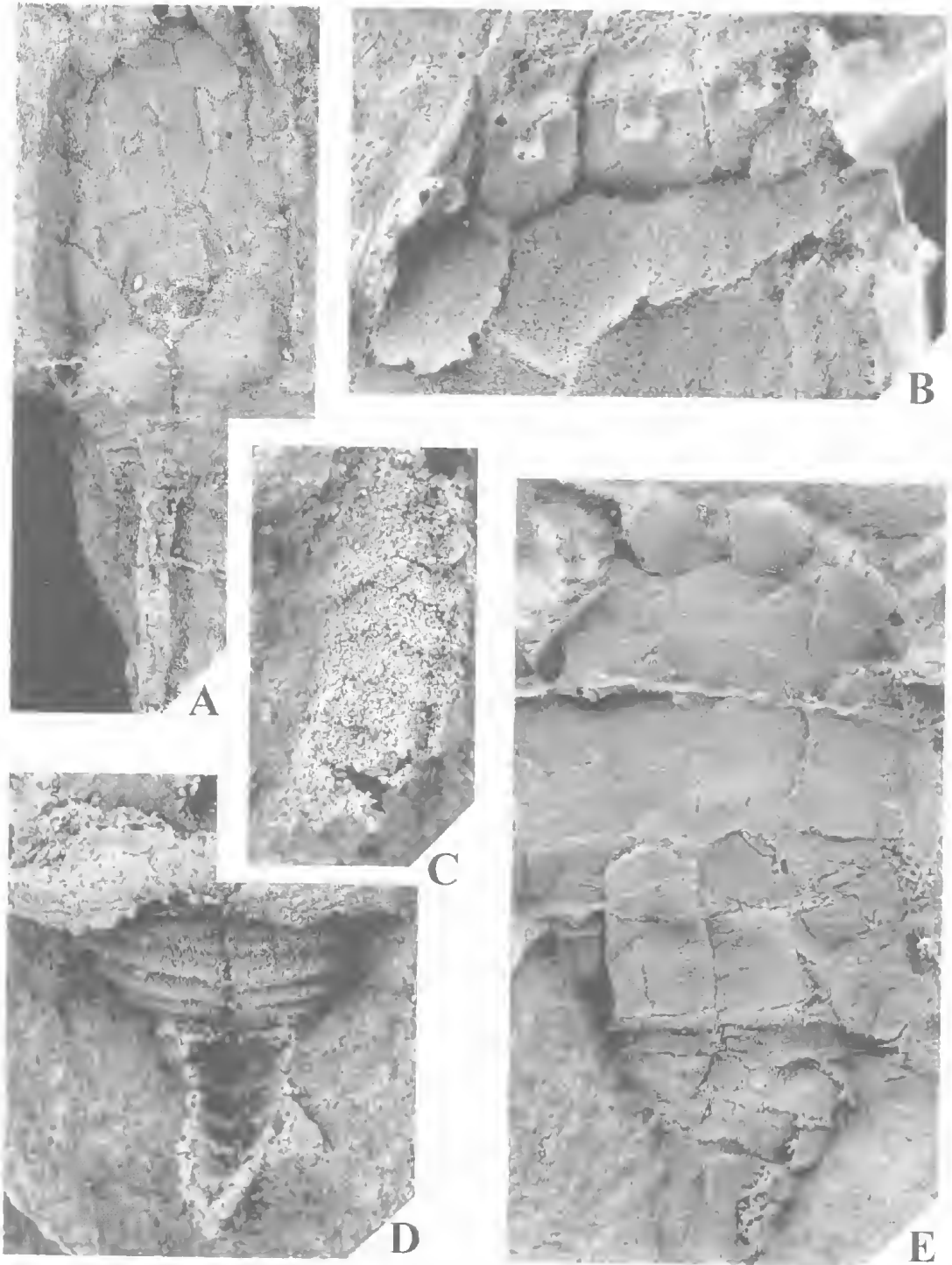


FIG. 4. *Victoriacystis wilkinsi* Gill & Caster. A, inside of plano-concave and part of exterior of convex surface of NMVP100446 from NMVPL300, $\times 3$. B, interior of distal part of convex surface of NMVP100462, $\times 10$. C, detail of distal part of appendage of NMVP100457, $\times 10$. D, tetramerous rings of proximal appendage and interior of distal appendage of NMVP23086, $\times 8$. B-D from NMVPL299. E, plano-concave surface of NMVP149352, from NMVPL1927, $\times 5$.

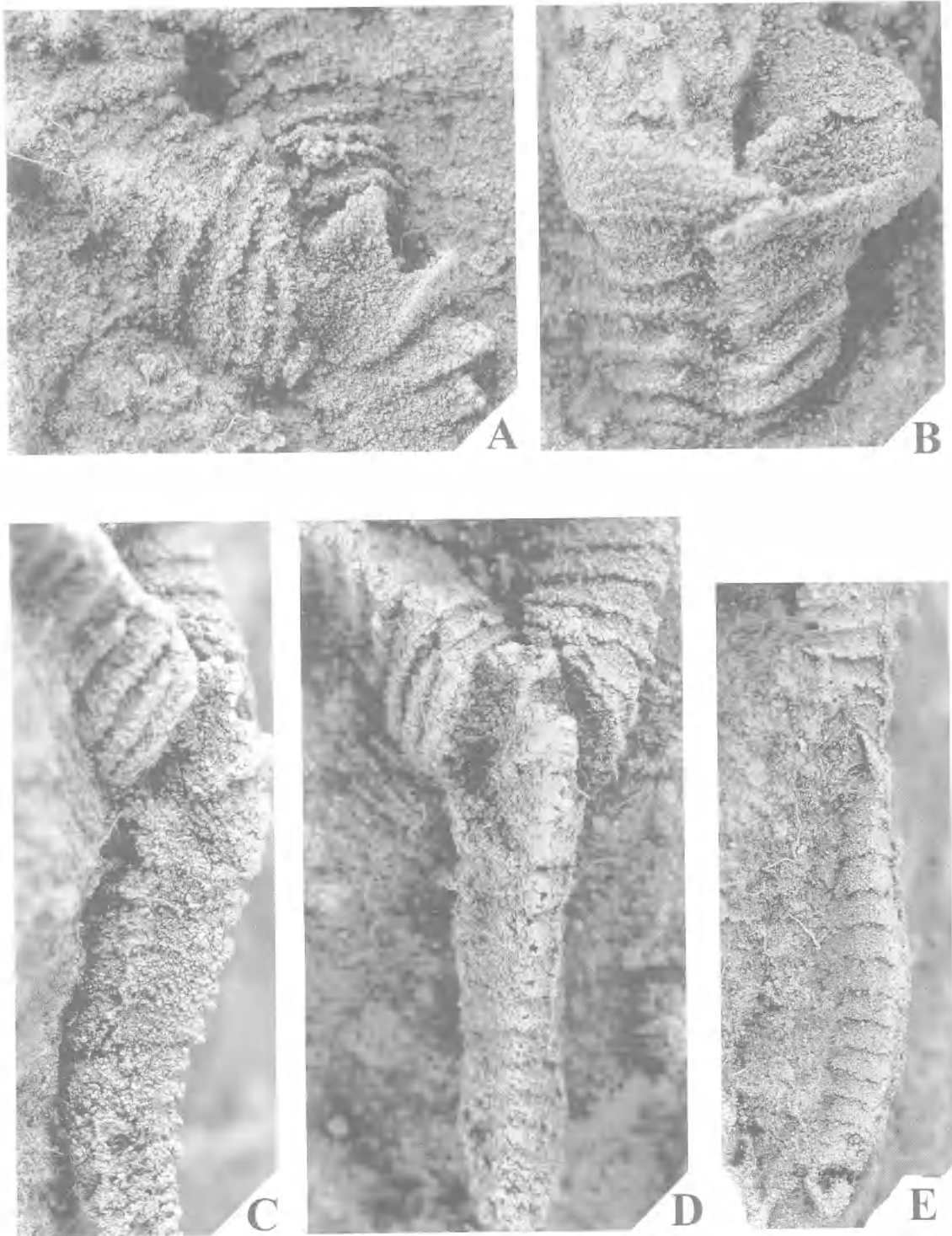


FIG. 5. *Victoriacystis wilkinsi* Gill & Caster. A-D from NMVPL299. Tetramerous rings, styloid, ossicles and paired plates. A, NMVP100457, $\times 10$. B-D, NMVP100466, all $\times 8$. E, NMVP100446 from NMVPL300, $\times 6$.

almost straight distal margins, poorly pronounced apices and blunt, markedly sloping apical margins.

REMARKS. New specimens of *V. wilkinsi* show that the range of variation in several anatomical features (e.g. body outline; shape of LOP and MOP; proportions of C21) is broader than previously reported (e.g. Ruta, 1997). None of the new specimens shows the knobby sculpture reported by Ruta (1997) on plate MOP. It is, therefore, impossible to establish whether such a sculpture is a genuine feature of this anomalocystitid. NMVP100462 (Figs 2A-B,D, 4B) provides the most complete information available on the inside of the convex surface. Internal characters of this surface are readily comparable with those of the congeneric *V. holmesorum* (Ruta & Jell, 1999b), although the 2 species differ in the shape of the internal thickenings on C2-C4. Several skeletal features show consistent variations in the 2 species of *Victoriacystis* (Ruta & Jell, 1999b) and new specimens of *V. wilkinsi* confirm this. Important differences are observed at the level of spines, and position, shape and proportions of several plates of the body and appendage.

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